Cook

MEMORANDUM

Subject: Transmittal of RCRA Facility Assessment Evaluation

From: Erlece P. Allen, Chief
Technical Section (6H-CT)

To: William K. Honker, Chief
Permit Section (6H-CP)

Attached please find a copy of the following RCRA Facility Assessment Evaluation:

- Facility Name: ~~Sinclair Oil Corporation Refinery~~ Tulsa
- EPA ID Number: ~~OKD 000760960~~

Please advise us if more information is required and/or if you need further assistance.

Attachment

cc: Sam Becker (6H-C)

bcc: B. Taylor (6H-CE)
G. Reiter (6H-HQ)
M. McKee (6H-ES) ✓

6H-CT:Sorrod:tlc:5-6790:Disk #1:FILE CODE:

6H-CT	6H-CT	6H-CP
Rhoads	Allen	Burch

7-23-87

I. EVALUATION

A. NUMBER OF SWMU(s)/AOC(s) INVESTIGATED DURING THE PR/VSI: 26

1. AREA OF CONCERN(s): 1

I. ~~NUMBER OF SWMU(s)~~ INVESTIGATED DURING THE PR/VSI: 25

1. Heat Exchanger

	LIST OF SWMU	REGULATED BY RCRA* (SUBTITLE C)	STATUS**
	* Y-Yes, N-No		
	** Active, Inactive, Closed (A, I, or C)		
1.	Walnut Grove Land Treatment Unit	Y	A
2.	Flame Area Land Treatment Unit	Y	A
3.	Equalization Pond	N	A
4.	Final Polishing Pond	N	A
5.	Biological Disk Basin	N	A
6-7.	Primary Clarifiers (2)	N	A
8.	Off-Test Water Pond #1	N	A
9.	Off-Test Water Pond #2	N	A
10.	API Separator Basins	N	A
11.	Storm Water Pond	N	A
12.	Oily Water Sewer Holding Pond	N	A
13.	Storm Water Reservoir	N	A
14.	Slop Oil tanks (4)	N	A
15.	Biological Sludge Digestion Pond	N	A
16-18.	Waste Storage Areas	N	A
19.	Storage Tank Area	N	A
20.	Abandoned Landfarm "A"	N	C
21.	" "B"	N	C
22.	" "C"	N	C
23.	" Landfill "D"	N	C
24.	" Landfill "E"	N	C
25.	API Separators (2)	N	A

2. AREA OF CONCERN(s): 1

1. Heat Exchanger Cleaning Area

* Y-Yes, N-No
** Active, Inactive, Closed (A, I, or C)

B. NUMBER SWMU(s) TO BE INCLUDED IN THE RFI: 7
(Except RCRA units subject to Subpart F refer to Section B)

1. NUMBER OF SWMU(s) AT WHICH RELEASES HAVE BEEN IDENTIFIED: 0

2. NUMBER OF SWMU(s) AT WHICH A RELEASE IS HIGHLY POSSIBLE: 7

	LIST OF SWMU	MEDIA	RATIONALE
1.	Inactive Landfarm "A"	S/GW	This 1-acre land farm was used from 1947-1970 to dispose of rust scale and unleaded tank bottoms. The area is diked, grassy, and shows no visible signs of environmental stress. However, the length of operation, high porosity and permeability of soil, proximity of water table, and probability that it was unlined make it highly probable of soil and groundwater contamination.
2.	Inactive Landfarm "B"	S/GW	This 2-acre landfarm was used from 1947-1976 as a disposal site for oily sludges. There are some thoughts that the area was the site of a major oil spill before 1983. Although there are no visible evidences of the release of hazardous contaminants, the probability of such release is strong due to the length of operation and the nature of the geological and hydrological conditions. In fact, the anomalous analyses from Monitoring Well, MPT-5, the upgradient well for the Flame Area Land Treatment Unit, could be the result of contamination from Landfarm "B" which is further up gradient.
3.	Inactive Landfarm "C"	S/GW	A 1-acre landfarm was used for a few years in the early 1970's to dispose of tank bottom sludges with tetraethyl lead. Releases to soil and groundwater are most likely; however, Monitoring well MPT-4 was drilled on the edge of this unit. It has not detected a release but may not be in a down gradient position.

	LIST OF SWMU	MEDIA	RATIONALE
4.	Inactive Landfill "D"	S/GW	Oily sludges and heat exchanger bundle sludges were dumped into this 5-acre landfill from 1947-1976. Subsequently, the wastes were excavated to the Flare Area Land Treatment Unit. The Storm Water Holding Basin was constructed over Landfarm "D". During the 30 years as a landfill for hazardous waste with a porous and permeable soil down to the water table, undetected contamination may have taken place.
5.	Inactive Landfill "E"	S/GW	From 1947-1975, API separator sludge was deposited in this 5-acre landfill. It is highly possible that some contamination of soil and possibly groundwater have taken place during this period. Later the waste was excavated and placed in the Flare Area Land Treatment Unit. Apparently, no sampling was done at that time. Now the site is occupied by two concrete surface impoundments, the Equalization Pond and the Oily Water Sewer Holding Pond.
6.	API Separators	S/GW Air	During the VSI, the ground around the separators was heavily stained; also, there was a very strong hydrocarbon odor. It is probable that the soil, groundwater and air have been contaminated. Spills from this unit probably have contributed to the to the underground hydrocarbon plume present under the center part of the refinery.
7.	Slop Oil Tanks	S/GW	As oil skimmed from the API separators is placed in the slop oil tanks for further separation, a spill can easily happen and, as evidenced by the stained gravel within the bermed area, has happened. Again, any spills from this unit would contribute to the hydrocarbon plume.

C. NUMBER OF SWMU(s) FOR WHICH AN RFI IS NOT RECOMMENDED: 16

LIST OF SWMU	RATIONALE
1. Equalization Pond	Waste water from the Oily Sewer System (oil washing water, sour water stripping, cooling tower blowdown, and process area runoffs) is contained in this concrete lined basin. The unit is outfitted with 2 mixers and 2 separators to begin the oil/water separation process. There have been no past histories of releases; no evidence during the VSI.
2. Final Polishing Pond	This concrete lined pond has a secondary containment and appears sound structurally. There are no evident releases. Water from this pond goes into the Arkansas River; discharge is covered via an NPDES permit.
3. Biological Disk Basin	Biological sludge is processed in this concrete lined basin with three rotating disks. No spills or evidence of one has been reported.
4-5. Primary clarifiers	Two concrete clarifiers for the elimination of solids are part of the biological wastewater treatment system. No releases have occurred.
6. Off-Test Pond #1	A 2.65 million gallon, concrete lined pond is used for wastewater storage. There is no evidence of past or present releases.
7. Off-Test Pond #2	This is an unlined pond used only in emergencies when Pond #1 overflows. It is unlikely to be used and has little potential for contaminant release.
8. Storm Water Pond	A 6.2 million gallon concrete lined pond is used for runoff from local storms. Few contaminants would be contained. The possibility of past, present, or future releases is minimal.
9. Oily Water Sewer Holding Pond	This concrete lined pond is used as a collection basin for process wastewater, runoff, and some treated waters before processing through the waste water treatment system. There have been no reports of past releases.

	LIST OF SWMU	RATIONALE
10.	Storm Water Reservoir	An unlined water reservoir is used as a spillover for the Storm Water Pond. It is used only in cases of emergency. There have been no releases reported or noted.
11.	Biological Sludge Digestion Basin	From the disk basin, water and sludge goes into the digestion basin for further treatment. This is a concrete lined unit with no past history of releases.
12-14.	Waste Storage Areas (3)	At least three separate storage areas are used within the facility to store wastes that are ignitable, corrosive, or reactive. None are stored for more than 90 days. The drums are steel, closed, and placed on concrete pads. There are no documented releases from these units.
15.	Storage Tank Areas	Several tank farms are located within the confines of the refinery. Each has a containment berm but is unlined. Periodically, wastes (tank water bottoms and sludges) are drained into metal transfer pans for transfer to land treatment units. Sand is spread to absorb any spillage. Some slight signs of leakage were noted near tank drain valves.
16.	API Separator Basins	Waste water from the API Separators is piped into this concrete basin before returning to the Waste Water Treatment System. No releases have been reported.

D. SUPPLEMENTAL INFORMATION ON RCRA REGULATED UNITS: 2
(Describe any problems identified or suspected from regulated units including identified releases to groundwater)

LIST OF SWMU	CONCERNS
1. Walnut Grove Land Treatment Unit	This 20-acre unit is used for disposition of oily sludges. A thin veneer of waste is tilled into soil on a daily basis. The The VSI indicated the unit was well tilled with no sign of waste, nor noticeable hydrocarbon odors. There was no staining. The unit is monitored by 4 wells (1 up and 3 down gradient) and pressure/vacuum lysimeters. Soil samples indicated high concentrations of oil and grease, lead, and total chromium; a high lead has been noted in one down gradient well (WPT-2) so a release has probably occurred, but it will be addressed in the Groundwater Monitoring program and later in the closure permits. Containment dikes are sufficient to protect against surface water contamination from a 100-year flood.
2. Flame Area Land Treatment Unit	The Flame Unit is 29 acres divided into three plots. Solid, semi-solid, and liquid wastes from various units within the facility are received. During the VSI there was heavy staining, small ponds of dark liquids, heavy hydrocarbon odors, and patches of catalyst fines. It is bermed to prevent surface runoff. Flame is a regulated unit with 5 monitor wells (1 upgradient and 4 down) plus 9 lysimeters. Sample analysis from the 5 wells are similar which indicates no releases or that the upgradient well is not representative of true background, in fact, it might be contaminated by Inactive Landfarm "B".

II. FINDINGS

A. RECOMMENDATIONS: (EPA, STATE and/or CONTRACTOR)

It is recommended that a RCRA Facility Investigation be done on the seven units listed in I. B. of this memorandum. The primary concern in each is the release or potential release to both soil and groundwater.

B. ADDITIONAL COMMENTS:

1. The surface impoundments in the Waste Water Treatment System have containment dikes to control runoff in event of overflow. The units are inspected daily to verify that proper freeboard levels are maintained. The structural conditions of the impoundments, vessels, and dikes are examined periodically.

2. Along the eastern border of the facility (between the refinery and the Arkansas River) a barrier dike has been constructed that is 5-feet above the 100-year flood level to protect against surface run-off of contaminated wastes into the river.

3. Since Sinclair took over operation of the refinery in 1983 approximately 60 violations of their NPDES permit violations have taken place. they have been explained by eqipment down for repairs, malfunctioning equipment, operator error (not closing valves), excessive use of corrosion inhibitors, and major rainfalls.

4. There has been a significant release of hydrocarbons to the groundwater during the 100-year life of the refinery. Originally, a containment well was constructed to prevent seepage into the river. However, a hydrocarbon recovery system (consisting of 140 monitoring wells and 4 recovery wells) has been in place since late 1982. Since its installation, the system has recovered over 200,000 barrels of oil and has arrested the downward migration of the plumes.

5. The contractor noted one Area of Concern: Heat Exchanger Cleaning Areas. The chromium level in the heat exchanger bundle sludge designates it as hazardous waste. When needed, the bundles are cleaned on concrete pads within the facility and drain to the oily water sewer and thence into the wastewater treatment system. If the cleaning is not done on a pad with curbing, a release to the soil is possible, but the infrequency of cleaning makes the probability of a release unlikely.

CONCUR: LYDIA M. BOADA CLISTA DATE: 2/1/88

RCRA FACILITY ASSESSMENT EVALUATION

PRELIMINARY REVIEW AND VISUAL SITE INSPECTION

(NO SAMPLING VISIT)

Region VI, Technical Compliance Section

FACILITY'S NAME(S): Sinclair Oil Corporation - W. Tulsa Refinery

EPA ID NUMBER: OKD 990750960

ADDRESS: P. O. Box 970, Tulsa, OK 74101

LOCATION: 902 West 25th Street, Tulsa, OK

SITE DESCRIPTION: 485 Acres along west bank of Arkansas River

DATE OF INSPECTION: 5-18-87 VSI CONDUCTED BY: C-Black & Veatch

REN IV

PREPARED BY: Black & Veatch DATE PREPARED: 7-23-87

REVIEWED BY: H. Gorrod DATE REVIEWED: 2/1/88

ANTICIPATED DRAFT PERMIT DATE: Feburary 1988

FACILITY STATUS: Active Petroleum Refinery

ANY ON-GOING STATE/FED 264, 265, or 270 CORRECTIVE ACTION OR CERCLA ACTION: No

DOES FACILITY HAVE A CERCLA FILE? YES X NO ____

When was the CERCLA PA/SI performed at this facility: 6/84

DOES FACILITY HAVE UIC WELL? YES ____ NO X TYPE: ____

TYPE OF DRINKING WATER SUPPLY WITHIN A 3-MILE RADIUS:
City of Tulsa Water Department - water comes from man-made lakes. Groundwater is poor quality.

TARGET POPULATION WITHIN A 3-MILE RADIUS:
Primarily an industrial complex of refineries, power plants, railroad facilities.

RECOMMENDATIONS: ____ S.V. X R.F.I. ____ I.M. ____ No Further Action under RFA

(Indicate only one unless I.M. is marked)

X 3004(u) ____ 3007

Possible Enforcement Action: ____ 3008(a) ____ 3008(h)

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tlc: